

BLOODBORNE PATHOGENS

In December 1991, OSHA issued regulations addressing job exposure to blood borne pathogens (BBP) — bacteria and viruses present in human blood and body fluids that can cause disease in humans. These pathogens include, but are not limited to:

- Human immunodeficiency virus (HIV) — A virus that destroys the body's ability to fight infection. The resulting disease is AIDS.
- Hepatitis B (HBV) — a potentially life-threatening blood borne pathogen. It is a severe liver infection with initial flu-like symptoms.
- Hepatitis C (HCV) virus — A common chronic blood borne infection that can lead to chronic liver disease. It develops slowly, often taking two or more decades before it is recognized.

The Blood borne Pathogens standard was created to provide a safer work environment for nearly six million workers who, as a result of doing their job, are at risk of exposure to blood borne hazards. Through a combination of engineering and work practice controls, personal protective equipment and clothing, training, vaccination, labels and other warning signs, and safe disposal techniques, worker exposures can be reduced or removed entirely.

When Does the Standard Apply?

The standard covers employers who have workers with occupational exposure, or the potential for exposure to infectious materials as a result of their job duties. Exposure can occur from contact with blood or other infectious material that passes into the body through the eyes, skin, nose or mouth, or under the skin by means of puncture with a sharp object such as a blade or metal shaving, a needle stick, cut, or human bite.

Although the majority of at-risk workers are in the healthcare field, exposures can also occur to workers in general industrial and office settings. In these facilities, workers may be at risk of coming into contact with blood or body fluids because of their job duties.

Medical and First Aid Response

If your company is not within near proximity to a clinic or medical facility (4-15 minutes, depending on the injuries that would normally be expected in your workplace), there must be at least one person for each work shift trained to provide first aid. Because individuals with first aid responsibilities have the potential for exposure, they must have blood borne pathogens training.

Maintenance and Clean-Up Work

In some cases, maintenance and janitorial workers are assigned the responsibility of cleaning up floors, walls, tools, and equipment following an accident that involves blood and body fluids. These workers need to have blood borne pathogens training so they are adequately prepared to perform this work and avoid exposure.

Housekeeping and Laundering

Workers in healthcare facilities and the hospitality industry may be at risk of exposure when cleaning rooms and laundering bedding. Likewise, linen services personnel may have exposure risks.

Occupational Health Nursing

Individuals employed as industrial occupational nurses have a high potential for exposure to blood borne pathogens.

Other Occupations at Risk

Additionally, fire fighters, law enforcement officers, correctional officers, morticians, and workers who handle regulated waste are at risk of blood borne pathogens exposures. All of these individuals need to know about disease transmission that may result from the everyday responsibilities of their jobs. They need to understand how blood borne infections occur, how they are passed from one person to another, and what they can do to protect themselves and their coworkers.

Good Samaritans

Occasionally a worker who does not have job duties with the potential of BBP exposure may come to the assistance of a coworker who is injured. Individuals who perform these voluntary acts, referred to as "Good Samaritans," usually have not received blood borne pathogens training or the hepatitis B vaccine. While the blood borne pathogens standard does not cover these Good Samaritan acts, OSHA strongly encourages employers to offer follow-up procedures to these employees;

What is required?

Employers with one or more employees having job duties that place them at risk of occupational exposure to blood borne pathogens must establish an exposure control program. As part of the overall program, tasks and procedures that may involve exposure to blood or other potentially infectious materials must be evaluated; workers performing these tasks must be identified; workers with potential exposure risk must be asked to participate in identifying, evaluating, and selecting effective engineering and work practice controls; and methods to reduce the exposure risks have to be put in place.

If you are covered by this standard, your employer must provide initial training when you begin a job that has exposure hazards and annual refresher training thereafter. The training should cover at least the following information:

- Access to OSHA's Blood borne Pathogens standard.
- Information on blood borne diseases and how they are spread.
- An overview of your company's exposure control plan and where you can review it.
- How to recognize job activities that have BBP exposure potential.
- The use and limitations of engineering and work practice controls.

- An explanation of the selection of personal protective equipment, including types, proper use, location, removal, handling, decontamination, and disposal.
- Information on the hepatitis B vaccine, exposure evaluation, availability, post-exposure evaluation, and follow-up.
- Your company's procedures for responding to emergencies involving blood, including the names of persons to contact and methods for

- reporting.
- Information relating to the signs and labels used to warn of potential hazards.

Hepatitis B Vaccine, Exposure Incident, and Follow-Up

Because the risk of becoming infected by the hepatitis B virus far outweighs the chances of contracting HIV, your employer must offer the hepatitis B vaccine to you if your job has the potential for exposure to blood or body fluids.

- 1.** The vaccine must be available at a reasonable time and place within 10 days of a job assignment
- 2.** Employers are not required to offer the vaccine to workers who provide first aid as a secondary job duty. A secondary job duty is one that is done on an "as needed" basis and is not the individual's primary job function.
- 3.** If you do not wish to be vaccinated, you must sign a declination form. However, your employer must provide the vaccination if you change your mind at a later date.
- 4.** If you report an exposure incident; your employer must arrange for an immediate and confidential medical evaluation. An exposure incident is defined as a specific eye, mouth, nasal membrane, non-intact skin, or pierced skin contact with blood or other potentially infected body fluids that results from the performance of your job duties.
- 5.** The medical evaluation must:
 - Document how the exposure occurred.
 - Identify and test the source individual, if feasible.
 - If consent is obtained, test the exposed employee's blood.
 - Provide counseling and evaluate any reported illness.

Defenses against Blood borne Pathogens Universal Precautions

- At the core of infection control is a method for preventing exposure by taking universal precautions. Observing universal precautions means treating all human blood and body fluids as if they are infectious.
- This method should be used in all exposure situations because it is often impossible to determine if the fluids contain blood or are infectious. Also, many people who carry blood borne diseases have no symptoms and may be unaware they have a problem.

Personal Protective Equipment

Personal protective equipment protects you and your clothing from exposure to blood or body fluids. Gloves are the first line of defense in these situations, but mask, face shields, eye protection, gowns, and for first responders, pocket masks may be used to provide

adequate protection.

Your employer is responsible to provide this equipment and you must use it whenever the possibility of exposure to blood or body fluids exists. This equipment shields your body by preventing blood or potentially infectious materials from passing through it to infect you. For emergency situations, your employer must

Have personal protective equipment readily accessible and available in appropriate sizes.

Gloves

Disposable gloves should be a standard component of emergency response equipment and must be worn by all workers prior to starting any emergency tasks involving occupational exposure. Gloves are the most commonly used item of personal protection providing a barrier between your hands and possible exposure to blood borne Pathogens.

- Single user (disposable) gloves must be replaced as soon as possible after they are contaminated or if they become torn or punctured. These gloves should never be washed or decontaminated for reuse.
- Never use gloves that are cracked, peeling, or discolored.
- Prior to putting on gloves, clip back long hair to keep it off your face and avoid the necessity of brushing it out of the way with potentially contaminated gloved hands.
- Never rub your eyes or face after gloves are in place.
- To remove gloves properly:
 1. Peel off one glove and hold it in the gloved hand.
 2. With an uncovered finger, peel off remaining glove from the inside.
 3. Dispose of the gloves promptly and then properly wash your hands.

Gowns/Aprons

Gowns and aprons may be used in situations where the potential for spraying or splashing of blood or body fluids exists or at an accident or clean-up scene when large amounts of blood and other fluids are visible. Since the purpose of the gown is to protect clothing from being saturated and exposing the wearer, it should always be tied or snapped in the back so that the front offers as much protection as possible.

Eye and Face Protective Equipment

Wearing appropriate face and eye protection such as goggles, glasses with solid side shields, or chin-length face shields provides protection when splashes, sprays, spatters, or droplets of infectious materials pose a hazard to your eyes, nose, or mouth. There are many types of face and eye protective equipment. Your employer will select the appropriate equipment based on the level of Exposure encountered. To further reduce the risk of exposure avoid touching a mask or eyepiece with gloved hands.

Communicating the Hazards

An important part of a blood borne pathogens program is the use of warning labels and signs to alert you and your coworkers of the presence of biohazards.

- All warning labels must have the biohazard symbol and be printed on a

fluorescent orange or orange- red background with lettering of a contrasting color.

- Red bags or containers may be used as a substitute for labels.
- Labels must be placed on all packaging that contains blood or potentially infectious material.

Work Practice Controls

Work practice controls alter the manner in which a task is performed. Safe work procedures include proper handling and disposal of emergency items that have come in contact with blood or other potentially infectious materials. All work procedures must minimize spattering, generating droplets, splashing, and spraying. This also includes proper cleanup methods that contain the body fluids and do not spread them out.

Safe work practices for blood borne pathogens protection stress thorough hand washing, preventing skin punctures by sharp objects, and minimizing splashing or spraying of blood.

Practice Safe Work Procedures

In any setting where the possibility exists that you may be exposed to blood borne pathogens, use the following engineering and work practice controls:

1. Always wash hands and other exposed skin areas immediately after removing gloves or other personal protective equipment or after any contact with blood or potentially infectious fluids.
If a sink isn't accessible, use antiseptic cleansers or novelettes and wash with soap and water as soon as possible.
2. Do not bend, break, or re-cap any used blade or sharp item. Never pick up broken glass or metal shavings with your fingers. Use tongs or a broom and dust pan to clean up these items.
3. Immediately, or soon after use, dispose of used blades and needles in puncture-resistant containers with leak-proof sides and bottom. These containers must be labeled as a biohazard or color-coded red.

Blades used to cut plastic are not contaminated but they must be disposed of in a way that does not pose a danger to your coworkers. These blades can be disposed of in a container marked "used blades." On the other hand, a used needle or a blade or metal shaving that has cut a finger is contaminated and must be deposited in a biohazard container.

4. In work areas where an exposure potential exists, use safe work practices including no eating, drinking, smoking, applying cosmetics or lip balm, or handling contact lenses
5. Never store food or drinks in refrigerators, shelves, cabinets, or on countertops where potentially infectious materials are kept.

6. Equipment, other than personal protective equipment, which has been contaminated during an incident, must be decontaminated prior to servicing.

Housekeeping Techniques

Your company's exposure control plan includes a written cleaning schedule outlining the decontamination steps that workers will follow. Generally, these steps include:

1. All contaminated equipment and work areas must be isolated by placing a tape or other type of barrier around the site and posting appropriate warning signs.
2. Clean and decontaminate the equipment, tools, and the work area as soon as possible following contamination by blood or potentially infectious fluids.
3. Protect yourself by putting on gloves, and as needed, a facemask, eye protection, and a gown or apron.
4. Scatter absorbent on any blood or body fluid on the floor, then collect the debris with a broom and dustpan and deposit it into a biohazard bag or container.
5. Never pick up broken glass or metal scraps with your hands even if you're wearing gloves. Use pliers, tongs, or a broom and dustpan and dispose of the sharp items in the containers provided.
6. Wash the floor and any contaminated surfaces with soap and water followed by a disinfectant. A wide variety of disinfectants are available and OSHA leaves that choice up to your company.

Some commonly used disinfectants are:

- Chemical solutions approved as hospital disinfectants, which are also effective against tuberculosis.
 - Products registered by the EPA as being effective against HIV/HBV.
 - A fresh solution of household bleach diluted to one part bleach and 10 parts water. The bleach solution should not be stored in glass containers, but in material such as the plastic bottle in which the bleach is originally packaged.
7. Machinery that has been splashed with blood or body fluids must be washed down with soap and water prior to disinfecting. If thorough decontamination cannot be done immediately, a label must be attached to equipment stating which parts remain contaminated to inform downstream servicing/repair employees of the hazard and precautions they need to take.
 8. After use, all gowns, gloves, and materials used in cleaning and disinfecting are to be placed in a biohazard bag or container.

- 9.** For general housekeeping in areas where blood or body fluids may be present, the custodian should wear protective gloves.
- 10.** Laundry that has been contaminated should be handled as little as possible. Protective gloves and other appropriate personal protective equipment must be used when handling these materials.
- 11.** You should never take contaminated clothing or protective equipment home to launder or clean.

Tips for Preventing Spraying and Splashing

The potential for spraying and splashing blood or body fluids exists at accident scenes and during clean-up procedures. Ways to protect yourself include:

- Select the proper personal protective equipment to shield you from exposure. These items may include gloves, facemasks, eye protection, and gowns or coveralls.
- Mopping tends to splash and spread fluids around. Instead, use an absorbent first, and then collect the material into a dust pan.
- When washing an item that has been exposed to blood or body fluids, fill the sink with water and disinfectant, and then place the item into the sink to soak. Never try to rinse the item under a running faucet — it can cause blood or fluids to be sprayed or splashed about. After the item is removed, clean and disinfect the sink.

Recordkeeping

Medical Records

Because of the critical nature of a blood borne illness, employee medical records are of extreme importance. These records must be maintained on all employees with occupational exposure for the period of their employment plus thirty years.

Employee medical records must include the following information:

- Name and social security number.
- Hepatitis B vaccination status.
- Results of all exams, testing, and follow-up procedures.
- Copy of healthcare professional's opinion.
- Copy of information provided to healthcare professional.
- Must be available to the employee.

As part of your employer's injury and illness recordkeeping, injuries that occur from contaminated sharps have to be recorded on a sharps injury log. The information in the sharps

log must be kept confidential to protect the identity of the injured employee. At minimum, the sharps log needs to include:

- The type and brand of device involved in the incident,
- The department or work area where the exposure incident occurred,
- An explanation of how the incident occurred.

Blood borne Pathogens Training Records

- Records of initial and annual refresher training must be kept for three years and include this information:

HAZARD COMMUNICATION

Do you work with or around chemicals? If you do, you are not alone. One out of every four workers contacts hazardous chemicals on the job. You, as an employee, have the need and the right to know the chemicals to which you are exposed, their hazards, and how to protect yourself when working. This simple concept is the purpose of the Hazard Communication Standard (HazCom), 29 CFR 1910.1200, issued by the Occupational Safety and Health Administration (OSHA).

You have the "right to know about the hazards of the chemicals you are expected to work with. No training handbook can cover every situation experienced at your company. If you have a question about a particular situation, ask your supervisor for information relating to your situation.

This overview of the Hazard Communication Standard should increase your awareness of hazardous chemicals used in your workplace. It also provides some key definitions, as well as the five major requirements of the standard.

Who is covered by this Standard?

OSHA's Hazard Communication Standard, 29 CFR 1910.1200, applies to chemical manufacturers, importers, and distributors, and any employers who expose employee(s) to one or more hazardous chemicals. You are considered an employee who may be exposed to one or more hazardous chemicals.

Hazardous Chemicals

To be classified as hazardous, a chemical must have either a physical or a health hazard associated with its use.

Physical Hazards

Physical hazards deal with the chemical's physical properties. For instance, certain chemicals may explode or catch fire. Physical hazards are further defined as a chemical for which there is scientifically valid evidence that it is a (n): combustible liquid, compressed gas, explosive, flammable, organic peroxide, oxidizer, pyrophoric, unstable-reactive, or water-reactive.

Health Hazards

Health hazards produce reactions within the body. These chemicals can cause one to become ill, either right away (acute) or at a later date (chronic). Here are some examples:

Health Hazard	Definition
Acute	Dermatitis that results from a one-time exposure of the skin to a chemical.
Chronic	Repeated exposures to elements such as Asbestos or chemicals known to cause cancer.

The term 'health hazard' includes chemicals that are: carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, liver toxins, kidney toxins, nervous system toxins, agents that act on the bone marrow and lymph nodes, and agents that damage the lungs, skin, eyes, or mucous membranes.

General Requirements of the Standard

A chemical manufacturer or importer must:

- Evaluate all chemicals for hazardous properties,
- List evaluation results on the MSDS and on labels, and
- Send an MSDS with each chemical shipment.

The five major employer requirements include:

- 1. Chemical inventory:** Identify and list the hazardous chemicals at the workplace;
- 2. Material-safety data sheets (MSDSs):** Keep material safety data sheets (MSDSs) for hazardous chemicals, or obtain them if they are not received. Make MSDSs accessible to all employees;
- 3. Labeling:** Ensure that all chemicals are labeled;
- 4. Information and training:** Communicate hazard information to employees through the chemical inventory, labels, MSDSs, a formal training program, and the written program; and
- 5. Written program:** Develop a written hazard communication program.

Hazardous Chemical Inventory

The first step in learning about hazardous chemicals is knowing what chemicals are used or

stored within the company. This is why your employer is required to maintain a Hazardous Chemical Inventory. This inventory must include:

- All hazardous chemicals used in your company,
- Hazardous chemicals taken off-site for use in other locations, and
- Hazardous chemicals stored away from the main plant.

Even though it is your employee's responsibility to maintain the hazardous chemical inventory, employees are the ones who work near the chemicals and who should be aware of the risks involved. Therefore, it is to your advantage to help keep the inventory current. Here are some tips:

- When you notice a new hazardous chemicals in your work area, check the inventory to see if it has been added. If the chemical isn't listed, or if you can't find it's MSDS, let your supervisor know.
- Be on the lookout for chemicals that have been forgotten or are no longer in use. Areas that may contain such chemicals are:
 - Seldom used cabinets,
 - Hard-to-reach shelves, and
 - Closets that have been converted to other uses.

Material Safety Data Sheets

An MSDS is defined as 'written or printed material concerning a hazardous chemical that is prepared in accordance with this standard.' Each chemical produced must be evaluated for its potential hazards by the chemical manufacturer or importer. The hazard information based on the scientific evidence of this evaluation is then placed on an MSDS. The chemical manufacturer, importer, or distributor is required to send an MSDS with:

- The initial shipment of the chemical, and
- The first shipment after an MSDS is updated.

The purpose of the MSDS is to provide you with information about chemical hazards.

General Information

Also called product information, identification, chemical identification, or material identification, this section of the MSDS supplies the same information used on the warning label. This includes:

Name of the chemical,
Any trade names, and Name, address and telephone number of the manufacturer. Other information that may be in this section:

- Emergency phone number,
- Department of Transportation (DOT) hazard class, and
- DOT shipping name.

Ingredients

Also called hazardous ingredients, this section lists what's in the chemical that can cause harm, as well as how much of the chemical an employee can safely be exposed to. This amount is referred to as either:

- **PEL:** Permissible exposure limit, or
- **TLV:** Threshold limits value.

These amounts, which are listed for a typical 8-hour work shift, are usually reported as parts per million or ppm.

Note

As a rule of thumb, the lower the number of the permissible exposure limit (PEL), the more hazardous the chemical is for example, a chemical that is so toxic that a very small exposure to it may cause harm will have a small number listed as its PEL, Therefore, a chemical that has 1 ppm listed as its PEL is far more Hazardous than another chemical that has 150 ppm listed as its Pa.

Physical Data

Also called physical/chemical characteristics, this section lists the chemical's physical characteristics. This includes:

- Boiling point,
- Appearance,
- Odor,
- Percent volatile (how much of the chemical evaporates at room temperature), and
- PH (how acidic or caustic a substance is on a scale of 1 to 14).

Fire and Explosion Data

This section tells you the flash point (temperature at which the chemical will ignite) and provides information on how to safely extinguish a fire, including the type of fire extinguisher to use.

Health Hazard Data

Also called toxicology and health information, this section identifies the generally recognized health hazards of the chemical. Symptoms of overexposure are also listed. This could include such comments as 'headache' or 'bum' to the statement 'presents no health hazard.'

Other information listed in this section includes:

- TLV (threshold limit value) and PEL (permissible exposure limit),
- Whether the substance is a carcinogen (known to cause cancer),
- Any medical conditions that may be aggravated by exposure,
- Primary route of entry—how the substance enters the body, and
- First aid and emergency procedures.

Always take time to become familiar with the first aid and emergency information in this section for any chemicals in your area. Watch for the signs and symptoms of overexposure listed in this section of the MSDS.

Reactivity Data

This section lists any materials or environmental conditions that could produce a dangerous reaction with the chemical.

Environmental Impact

Also called spill or leak procedures, this section provides information on how to clean-up an accidental spills or leak of the chemical. The proper waste disposal method is listed as well.

Special Protection Information

Also called 'exposure control methods,' this section lists other protection you may need to follow when handling the chemical, such as the proper protective equipment required for clean-up of a spill.

Special Precautions

These are other generally applicable precautions for safe handling and use of the chemical. This section may include the type of signs to use in case of a spill and how to properly handle contaminated equipment.

Where to Find the MSDS

The Hazard Communication Standard requires that material safety data sheets be easily accessible to you. In any work area, you should always know where the MSDS information is kept. When you travel between work sites during a work shift, the MSDSs may be kept at a central location at the primary workplace facility.

Labels and Labeling Hazard Warning Labels

A hazard warning is defined as 'any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning that conveys the hazard(s) of the chemical(s) in the container(s).'

Here are some important facts about hazard warning labels:

- Each chemical produced must be evaluated for its potential hazards by the chemical manufacturer, importer, or distributor, who is then responsible for labeling, tagging, or marking each container of hazardous chemicals that leaves their facility. When chemicals are shipped by tank truck or rail car, the label can be provided along with the shipping papers and material safety data sheet. Department of Transportation (DOT) placards serve as hazard warnings while the chemicals is in transport..

- The product label must list the:
 1. Hazardous chemical
 2. Hazard warning(s), and
 3. Manufacturer, importer, or other responsible party's name and address.

Any type of label is acceptable if it clearly conveys the information and is worded in English.

- When a chemical shipment reaches the workplace, the designated company representative checks containers for labels before accepting the cargo. Unlabeled containers are returned to the manufacturer or distributor.
- A hazard warning label is not intended to be the sole or most complete source of hazard information. It does, however, alert you to the fact that a potential hazard exists this is the purpose of a hazard warning label. For more hazard information, always check the MSDS.

Employers' Responsibilities

Relabeling

There are some situations where the employer will relabel chemicals after the shipment arrives at the workplace. The most common reasons for relabeling are:

- To use a uniform labeling system
- To break down a large quantity of a chemical preparation, and
- To replace soiled, unreadable, or missing labels.

Uniform Labeling Systems

Uniform labeling systems help employees recognize and understand labels, which can make it easier to identify potential hazards. When using uniform labeling, OSHA recommends that the incoming label be left on the original container.

Four of the more common uniform labeling systems are:

- **HMIS:** Hazardous Materials Identification System, developed by the National Paint and Coatings Association,
- **NFPA:** National Fire Protection Association system,
- **ANSI:** American National Standards Institute (ANSI Z129.1), and
- **DOT:** U.S. Department of Transportation.

Whatever labeling system is used, it must:

- Clearly identify the chemical name and hazards in words, pictures or symbols; and
- Be worded in English, although labels in other languages may be added.

Breaking Down a Large Quantity of a Chemical Preparation

If a large quantity of a chemical preparation is broken down into smaller containers for distribution throughout the company, **each of the smaller containers must be labeled.**

An example of this occurs when spray bottles are used. Each spray bottle must be labeled with the chemical name and the potential hazards contained inside.

Replacing Soiled, Unreadable or Missing Labels

When a label becomes dirty or unreadable or falls off, the employer is responsible for applying a new one.

Other Labeling Situations

As mentioned earlier, the chemical manufacturer, importer or distributor must label, tag, or mark the chemical. There are, however, some situations where the employer is responsible for labeling. These are important areas because they are frequently overlooked. Here are two of the most common situations where the employer is responsible for labeling:

- **Welding** areas, where workers are exposed to a variety of air emissions and fumes; and
- Areas where **carbon monoxide** is emitted. This is the most prevalent hazard in the workplace and includes areas where vehicles are idling or where forklifts are in use.

In both of these situations, workers must be warned with signs, posters, or other materials about the potential hazards in these areas.

Employee Information and Training

Information and training is one method used to give you an awareness of the chemical hazards in your work area. Information and training is geared to make the workplace safer for you.

Training Requirements

The Hazard Communication Standard requires any company, large or small, that uses even one hazardous chemical to provide information and training for employees. This training must be provided:

- At the beginning of each new assignment involving hazardous chemicals, and
- Whenever a new physical or health hazard is first introduced.

Your employer is required to inform workers of the following:

- Requirements of the standard;
- Places where hazardous chemicals are present in your work area;
- The location and availability of the:
 - Written program,
 - Chemical inventory, and
 - Material safety data sheets (MSDS);
- How to use an MSDS;
- The type of labeling system used; and
- Specific hazardous chemicals in the employees' work areas.

Chemical-Specific Training

Since employees use many different chemicals, with varying types of hazards, chemical-specific training must be done according to employees' needs. Some companies may present this training by hazard groups—for example, flammables or corrosives—while others provide training for specific chemicals in a work area. Training by hazard group is usually the method preferred by companies whose employees work with so many chemicals it is impossible to train them in each specific one.

Whatever method is used, chemical-specific training must be included:

- How to detect the presence or release of a hazardous chemical;
- The physical and health hazards involved; and
- employees use to protect their selves against these hazards including: Measures
 - The use of safe work practices
 - Emergency procedures, and
 - Proper personal protective equipment.

The Written Program

Every employer covered by the Hazard Communication Standard is required to create and implement a written program. The purpose of the written program is to show how your company has met all the standard's requirements.

Written Program Requirements

The written program must explain:

- The company's method to determine which chemicals in the workplace are hazardous;
- The company's labeling system;
- How material safety data sheets are received and kept;
- The names of those in charge of labeling, MSDS collection, and inventory;
- How hazardous chemical training is done. This must include:
 - Methods used for chemical-specific training.
 - The type of safety precautions taught,
 - Emergency and first aid training provided, and
 - Type of training provided for certain non-routine tasks, such as cleaning reactor vessels, and for the hazards associated with unlabeled pipes.
- How this information and training will be provided to contract workers.

The written program will also contain the chemical inventory.

Updating the Written Program

The written program is a compilation of everything the employer has done regarding hazard communication. It is the one place where an employee can locate everything their company does to protect them from the hazardous chemicals in their workplace. Once the written program is developed, however, the task is only half complete. An equally important part of this effort consists of keeping the plan up-to-date. In order to remain current, the written plan must be constantly revised and updated. While it is the employer's responsibility to develop the written plan, **keeping it current is everyone's job.**

Your input into this process is extremely important. You can provide valuable feedback by letting your employer know which parts of the training were the most helpful, as well as any areas that were confusing or incomplete. In this manner, the written program can be revised with your suggestions in mind. By doing this, the training will really meet your needs.

Working Safely with Hazardous Chemicals

Here are some common-sense tips to working with hazardous chemicals:

- Since certain metals can react with chemicals, always remove jewelry to avoid skin reactions.
- Use face or eye protection if there's a possibility of a hazardous chemical splashing

in your face.

- Make sure safety gear is clean and returned to its proper place after use.
- Wash hands thoroughly after working with hazardous chemicals.
- Do not eat, drink, smoke, or use personal items in an area where hazardous chemicals are present. It is possible for toxic fumes or particles to enter your body as you swallow or inhale.
- Dispose of any hazardous chemical in the proper container—do not mix chemical wastes.
- Know where the eyewash station(s) are located and how to properly operate them.
- If medical attention is needed, know the policy for sending the NISDS with the co-worker to the healthcare facility.
- Know the company policy for handling a hazardous chemical spill or leak.

LIFTING

Today, most heavy objects are lifted by forklifts, hoists, dollies, and other types of equipment. However, sometimes it is necessary to load or unload moderate to heavy objects by hand.

In addition, today's jobs expose workers to specialized tasks, higher assembly line speeds, and increased repetition that can be related to chronic or acute injury. Workers' hands, wrists, arms, shoulders, backs and legs may be subjected to repetitive twisting, forceful, or flexing motions; excessive vibration; and awkward postures during a typical workday. Recognizing ergonomic hazards in the workplace is the first step in improving worker protection.

Basics of Safe Lifting

To avoid injury, it is important to follow proper lifting procedures.

- 1. Size up the load before trying to lift it.** Test the weight by moving one of the corners. If the load is too heavy or of an awkward shape, the best thing to do is:
 - Get help from a co-worker.
 - Use a mechanical lifting device.
 - Break down the load into smaller parts if you can.
- 2. Make sure you can carry the load where you need to go before attempting to move it.** Also, make sure your path is clear of obstacles and that there are no hazards, such as spilled grease or oil in your path. Turn your body by changing foot

positions, and have sure footing before setting out.

3. Bend the knees. This is the single most important rule when lifting moderate to heavy objects. Take a tip from professional weight lifters. They can lift tremendous weights because they lift with their legs, not their backs.

- Position your feet close to the load.
- Center yourself over the load.
- Bend your knees and get a good hand hold.
- Straighten your legs to lift straight up, smoothly.
- Allow your legs, not your back, to do the work.
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4. Do not twist or turn your body once you have made the lift. Keep the load close to your body, and keep it steady. Avoid any sudden twisting or turning.

5. Set the load down properly. Setting the load down is just as important as lifting it: Lower the load slowly by bending your knees letting your legs do most of the work. Don't let go of the load until it is secure on the floor.

6. Always push, not pull, the object when possible. When moving an object on rollers, for example, pushing puts less strain on the back and is safer, should the object tip.

Planning Ahead

Planning ahead makes sense. If you know certain loads will have to be carried from storage, place the objects on racks, not on the floor, whenever possible. That way, the load will not have to be lifted from the floor. Do not attempt to carry loads that are clearly too heavy for you. Long objects, such as pipes and lumber, may not be heavy; but the weight might not be balanced. Such objects should be carried by two or more people.

If a heavy load can be split up into smaller ones; you're better off doing that, even if loading takes a few extra minutes. Trying to lift it all at once may be asking for trouble when the weight is great.

When catching falling or tossed objects, your feet should be firmly planted, with your back straight and your knees slightly bent. Your legs should absorb the impact, not your back. If you're working on something low, bend your knees. Keep your back as straight as possible. Bending from the waist can lead to back pain. In both of these situations, frequent rest breaks are necessary to keep from getting back fatigue.

What Are Back Injuries?

Sprains and strains are the most common types of back injury. Your back can be injured by improper lifting, falling, auto accidents, and sports activities. But of these, lifting improperly is the largest single cause of back pain and injury.

Problems with the lower back are a frequent cause of lost work time and worker's compensation. The Bureau of Labor Statistics (2001) reported over 264,800 injuries resulting in days away from work (representing 15.6 percent of all occupational injuries or illnesses) from overexertion in lifting during 1999.

Here are some things that can go wrong with the back:

- Strains and sprains can result from injury to muscles and ligaments that support the back. A torn ligament will result in severe back pain.
- Ruptured or slipped disk occurs when the disk (vertebral cushion) presses on a nerve.
- Chronic tension or stress can result in muscle spasms and aggravate persistent and painful backache.
- Other conditions such as pain "referred to the back" from other organs, such as the kidneys and prostate, can result in nagging back pain.

Why Back Pain Happens

Using improper lifting techniques can lead to back injuries, but other factors can contribute to this age-old problem.

Poor Posture

Whether you're standing, sitting, or reclining, posture affects the amount of strain put on your back. The wrong posture increases strain on the back muscles and may bend the spine into positions that will cause trouble. When standing correctly, the spine has a natural "S" curve. The shoulders are back and the "S" curve is directly over the pelvis.

Good sitting posture should put your knees slightly higher than your hips. Your hips should be to the rear of the chair with your lower back not overly arched. Also, your shoulders and upper back are not rounded. Reclining posture is important, too. Sleep on your side with knees bent, or sleep on your back. Sleeping on your stomach, especially on a sagging mattress with your head on a thick pillow, puts too much strain on the spine. Result: morning backache.

Poor Physical Condition

Your physical condition can lead to back pain. If you are overweight, and, especially if you have developed a pot belly, extra strains on your spine results. An estimate is that every extra pound up front puts 10 pounds of strain on your back.

Infrequent exercise is a major factor for chronic back pain, too. A sudden strain on generally

unused back muscles leads to trouble. Proper diet and exercise is the sensible way to help avoid back problems.

Stress is another factor that may lead to back pain. Stress can cause muscle spasms that affect the spinal nerve network. Although stress is part of everyone's life, and a certain amount of stress is normal, excessive stress causes backache. The solution is a balanced lifestyle with time to relax.

Repetitive Trauma

People often think back injuries result from lifting heavy or awkward objects. Many back injuries, however, do not come from a single lift, but occur from relatively minor strains over time.

Back injuries, as with other cumulative trauma disorders (CTDs), may arise from repeated injuries. As the worker repeats a particular irritating movement, the minor injuries begin to accumulate and weaken affected muscles or ligaments. Eventually a more serious injury may occur. Thus, a single overexertion may actually have little to do with an injury.

Remember to use mechanical lifting aids when appropriate, along with good lifting techniques, whenever you do any lifting. You can lift safely when you lift with caution.

Certain jobs require long hours of standing or sitting. Get up and stretch frequently if you are required to sit for long periods. If standing, ease the strain on your lower back by changing foot positions often, placing one foot on a rail or ledge. However, keep your weight evenly balanced when standing. Don't lean to one side.

Work at Working Safely

With proper exercise, a good diet, and the proper lifting techniques, your chances of being out of work with chronic or severe back pain are greatly reduced.

Remember to:

1. Be aware of proper posture when sitting, standing, or reclining..
2. Follow sensible diet and exercise program to help your back.
3. Get help to lift objects that are too heavy for you.
4. Plan ahead when lifting jobs are necessary.
5. Lift with the legs, not your back.
6. Make sure your path is clear and be careful of your footing.
7. Never twist or turn suddenly while carrying a heavy load.
8. Bend your knees to lower the load as you set it down.